

## SOLUTIONS FOR AGRICULTURAL APPLICATION : MAT100 SERIES

### HOLLOW SILICA MICROSPHERES

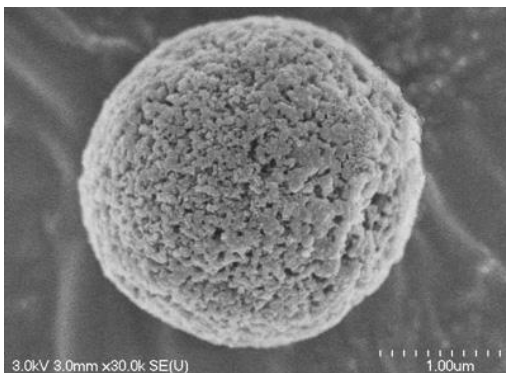
#### DESCRIPTION

##### Agricultural Application

Silica microspheres can be used for agriculture application such as media support for beneficial microorganism's preparation such as found in biofertilizers or bioinoculants.

Hollow silica microspheres offer:

- Media support for effective microorganism growth (bacteria, yeast, mold, fungi)
- Increase bio fertilizer resistance to leaching after heavy rain
- Increase microflora biofilm activity



#### PROPERTIES

- Available in different particle sizes from 1 to 70  $\mu\text{m}$ . Our two typical products have a size (D50) around 10 and 30  $\mu\text{m}$
- Surface area of 100  $\text{m}^2/\text{g}$  ( $2 \times 10^7 \text{ m}^2/\text{m}^3$ ) and more
- Particles covered with polar and non-polar chemical groups  
Can be functionalized with other organic or inorganic species for specific applications
- Can be dispersed in water, alcohols and other organic solvents.
- Possibility to encapsulate concentrated nutrients and permit slow and extended release

#### TYPICAL PROPERTIES\*

<b>Chemical Name</b>	Silicon dioxide
<b>Structure</b>	Amorphous
<b>Surface Groups</b>	Organic polar and non-polar groups
<b>Powder density</b>	0.3 $\pm$ 0.03 g/mL
<b>Purity (powder)</b>	> 99 %
<b>Surface Area</b>	> 100 $\text{m}^2/\text{g}$
<b>Pore size</b>	15 - 30 nm

#### SPECIFICATIONS

<b>Morphology</b>	hollow silica particles
<b>Size</b>	Different sizes from 10 to 30 microns

#### Forms supplied

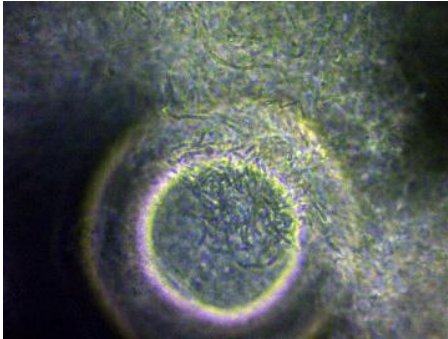
- White Powder (free-flowing powder)
- Dispersion in solution (Water, alcohols, DMF, acetone, etc.)

#### Custom Synthesis

- Special sizes
- Custom surface modifications (functionalization with organic, inorganic, metallic or biological species)

*\*Values stated in this technical data sheet represent typical values as not all tests are run on each lot of material produced. For formalized product specifications, please contact us.*

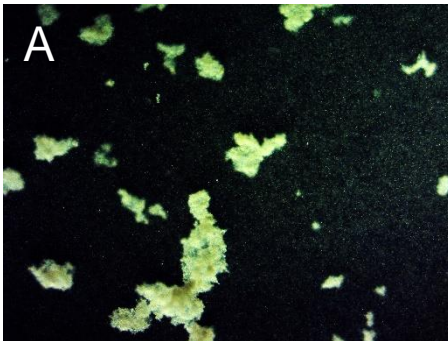
## SOLUTIONS FOR AGRICULTURAL APPLICATION : MAT100 SERIES



Formation of a dense biofilm on our hollow silica microsphere after 24 hours of incubation

### BENEFITS FOR BENEFICIAL MICROORGANISM PREPARATION

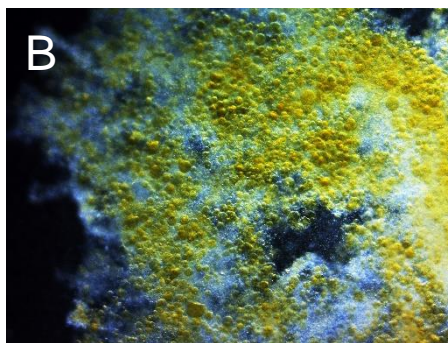
- Reduced incubation time and increased growth rate
- Increased microbial density
- Increased microbial activity
- Possibility to encapsulate concentrated nutrients and permit slow and extended release of nutrient to the microorganism
- Can be used with different microorganisms such as bacteria, yeast, mold and fungi



A) Growth of bacteria without our hollow silica microsphere after 5 days of incubation.

### BENEFITS FOR BIOFERTILIZER AND BIOINNOCULANT APPLICATIONS

- Increased resistance to leaching after heavy rain
- Increased resistance to harsh environment
- Ecological choice



B) Growth of bacteria in the presence of our hollow silica microsphere after 5 days of incubation.

### CAUTIONARY INFORMATION

Before using this product, refer to the Material Safety Data Sheet (MSDS) label for use and handling instructions.